

Applicants : Maurice Husson, Christian Jacquemet and Eugene Vorobiev
Appl. No. : 10/520,471
Filed : January 7, 2005

REMARKS

Claims 9-28 are pending in the subject application. By this amendment, Claim 9 has been amended to further define applicants' invention. The amendment to Claim 9 is supported by the application as filed. Accordingly, entry of the amendments to Claim 9 is respectfully requested.

In view of the remarks which follow, applicants respectfully request reconsideration and withdrawal of the various rejections set forth in the October 16, 2008 Office Action, and passage of the claims to allowance.

35 U.S.C. 102 Rejection

Claims 9-11, 19-21 and 23 were rejected under 35 U.S.C. 102(b) as anticipated by Virtanen (WO 97/38940). This rejection is respectfully traversed.

In response to applicants' previous arguments, the Examiner stated that "in line 3 of claim 1, Virtanen clearly discloses a filtration step in the absence of dispersing agent and continuous to this step the cake is filtered with a dispersing agent" and "since the steps follow each other they are continuous." Applicants respectfully point out that claim 1 of Virtanen does not explicitly mention the use of any dispersant, or the absence of the use of any dispersant. Rather, with respect to the claims, the use of a dispersant is first described in Claims 7 and 8. However, Claim 7 of Virtanen requires that the dispersant agent is added to the "neutralized" precipitate. Claim 1 does not mention a neutralized precipitate, and this is in fact first mentioned in Claim 6, in which the precipitate is neutralized after the wash with a mineral acid. Since Claim 7 requires that the dispersant agent is added to the "neutralized" precipitate, the process of Claim 1 requires at the very least two steps before addition of the dispersant: (1) washing the PCC-containing precipitate with water in which carbon dioxide is dissolved (see, Claim 1, lines 4-9), and (2) a neutralization step before addition of the dispersant (see, Claims 6

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and 7). Therefore, Claim 1 of Virtanen, when read in light of Claim 7, does not disclose (1) a second filtration stage in which the pre-layer of mineral matter formed from the first filtration stage is treated with a second aqueous suspension containing a dispersant agent, and (2) continuous operation between the first and second filtration stages, as in the claimed process. The same is true with respect to Claim 8, which by being dependent on Claim 7, necessarily requires (1) washing the PCC-containing precipitate with water in which carbon dioxide is dissolved (see, Claim 1, lines 4-9), and (2) neutralization of the PCC before addition of the dispersant agent to the neutralized precipitate (see, Claims 6 and 7).

With respect to the Examiner's reference to the passage in Virtanen at page 8, lines 13-22, it is noted that following collection of the PCC containing precipitate on the filter (filtration 1 at page 5, lines 22-23), multiple steps are disclosed on pages 6-7 of Virtanen before the dispersion step on page 8. At the very least, and consistent with Claims 1, 6, 7 and 8 discussed above, the steps include (1) washing of the PCC with water in which carbon dioxide is dissolved (page 6, line 1), and (2) neutralization of PCC (page 7, line 22) before dispersion. In this regard, Virtanen makes clear that the dispersion step is performed on the "filtered, washed and neutralized PCC precipitate" (page 8, line 3). Therefore, Virtanen does not disclose (1) a second filtration stage in which the pre-layer of mineral matter formed from the first filtration stage is treated with a second aqueous suspension containing a dispersant agent, and (2) continuous operation between the first and second filtration stages, as in the claimed process.

For these reasons, the claimed invention is not anticipated by Virtanen, and reconsideration and withdrawal of this rejection is respectfully requested.

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35 U.S.C. 103 Rejection

Claims 9-28 also were rejected under 35 U.S.C. 103 as unpatentable over Bleakley, et al. (U.S. Patent No. 5,833,747) in view of Izati, et al. (U.S. Patent No. 3,970,639). This rejection is respectfully traversed.

In response to applicants' previous arguments, the Examiner seems to acknowledge that Bleakley does not teach a second filtration step. However, the Examiner stated that (1) performing another filtration continuous to the first filtration is obvious to one of ordinary skill in the art, (2) one of ordinary skill in the art can continuously filter the product of Bleakley numerous times including the fluid suspension containing the dispersant as in column 7, example 1 of Bleakley, (3) applicants have not shown the criticality of including a second continuous filtration step, (4) selection of any order of performing process steps is obvious in the absence of new or unexpected results, and (5) the art teaches filtration of the "fluid mineral matter" and one of ordinary skill in the art can filter the "fluid mineral matter" a hundred times but the concept remains taught by Bleakley.

Applicants respectfully disagree that a prima facie of obviousness has been made. The claimed invention is directed to a process in which two separate stages of filtration are performed, wherein in the first filtration stage, a pre-layer of mineral matter is formed on a filtration membrane stage in the absence of a dispersant agent, and in the second filtration state, which is operated continuous to the first filtration stage, the pre-layer of mineral matter from the first filtration stage is treated with a second aqueous suspension containing a dispersant agent to obtain a filtrate and a concentrated cake. While Bleakley discloses partially dewatering a PCC-containing suspension (Col. 7, lines 46-49), Bleakley does not teach (1) a second filtration stage in which the pre-layer of mineral matter formed from the first filtration stage is treated with a second aqueous suspension containing a dispersant agent, and (2) continuous

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operation between the first and second filtration stages, as in the claimed process. Rather, in Bleakley, the pH of the dewatered calcium carbonate is first adjusted (see, Col. 7, lines 51-52) before the dispersion step. In addition, the dispersion step of Bleakley does not involve filtration whatsoever. Rather, Bleakley teaches redispersion of the partially dewatered calcium carbonate in water containing the dispersing agent in a high shear mixer to give the fluid suspension containing the calcium carbonate. This is different from the claimed process in which a second filtration stage is preformed by treating the pre-layer of mineral matter from the first filtration stage with a second aqueous suspension containing a dispersant agent to obtain a filtrate and a concentrated cake. Therefore, using the teachings of Bleakley as a guide, the skilled artisan would chose to combine the dispersion agent and the calcium carbonate in a fluid suspension in a high speed mixer, and not to perform a second filtration stage continuous to a first filtration stage, in which the pre-layer of mineral matter formed from the first filtration stage is treated with a second aqueous suspension containing a dispersant agent. The Examiner also has not provided any reason that the skilled artisan would be motivated to modify the teachings of Bleakley to include a second filtration step as set forth in the claimed process.

As discussed on page 1 of the present application, to accomplish the various industrial uses of mineral suspensions, it is necessary to produce suspensions of mineral loads with excellent rheology, i.e. with a low viscosity during the period of storage to facilitate manipulating and application, and as high as possible a mineral content, in order to reduce the quantity of water handled (page 1, lines 18-22). During production of the aqueous mineral suspensions, some processes lead to weakly concentrated aqueous suspensions that must be concentrated to offer them to the end user (page 1, lines 24-30). Filtration is one of the means known to concentrate suspensions; however, filtrations have led to cakes which are so compact that it is was

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necessary to add the dispersant after the filtration stage and to use high mechanical energy to return the cakes to suspension (page 1, lines 32-36). This is, in fact, what Bleakley teaches (i.e., redispersion of the partially dewatered calcium carbonate in water containing the dispersing agent in a high shear mixer to give the fluid suspension containing the calcium carbonate). Other techniques are also described in the art, and include, for example, (1) filtering suspensions without any dispersant, which has the disadvantage that the produced cakes are difficult to disperse (page 2, lines 9-13); and (2) the use of a dispersant before filtration, which has the disadvantages that (i) large quantities of dispersant are required for filtration, resulting in large quantities of the dispersant in the filtrate, generating environmental and ecological problems, (ii) the requirement for particular dispersive facilities, and (iii) the use of a pressure of over 17 bars for filtration (page 2, lines 20-43).

The present invention has resolved the disadvantages associated with the prior art. In this regard, as mentioned on page 1, line 44 to page 2, line 7, by employing two separate and continuous stages of filtration of the present invention, where a pre-layer of mineral matter is formed on the filtration membrane in the absence of a filtration stage, and in the second filtration stage, the pre-layer of mineral matter from the first filtration stage is treated with a second aqueous suspension containing a dispersant agent to obtain a filtrate and a concentrated cake, it is possible to obtain, without any obligation to add a dispersant agent after the concentration stage or to use mechanical energy to return the mineral matter to suspension, an aqueous suspension of fluid mineral matter that can be directly used following the filtration stage.

In view of this discussion, it should be clear that applicants' claimed process, and the advantages associated therewith, are not taught or suggested by the cited art.

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Since Izaki was cited merely to show that the pigment aluminum hydroxide can be included in paper coating compositions, the addition of Izaki to Bleakley does not render the claimed invention obvious.

For these reasons, applicants maintain that the claimed invention is patentable over Bleakley in view of Izati. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Supplemental Information Disclosure Statement

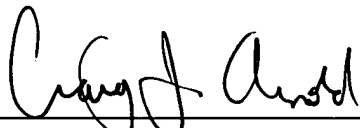
In accordance with the duty of disclosure under 37 C.F.R. §1.56, applicants would like to direct the Examiner's attention to the attached form PTO/SB/08A and B (2 pages). Copies of the non-U.S. patent items listed on form PTO/SB/08A and B are also included.

No fee, other than the \$1110 three month extension of time and the \$180 IDS fee, is deemed necessary in connection with the filing of this response. If any fee is required to preserve the pendency of the subject application, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 01-1785.

Respectfully submitted,

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